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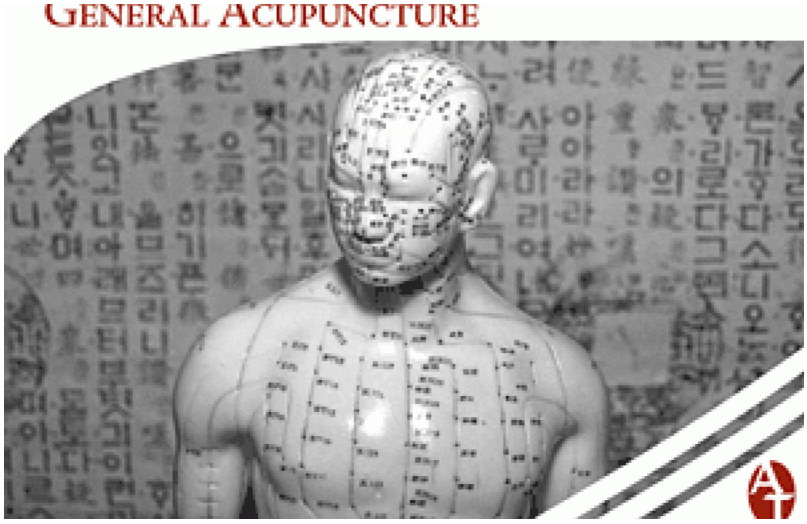

HEALTH & WELLNESS / LIFESTYLE

The Basics of Western Medicine Drugs For Eastern Practitioners: Part I

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Those who seek your medical care are likely to be taking Western drugs. These medications have distinct effects on their physical condition, as well as their mental and emotional condition, which may affect the treatment you select for them and also their response to your treatment. An important aspect of your careful medical evaluation is to sort through what medications your patients are taking. I will be covering Western drugs in three installments, to help you recognize types and classes of such medications, and their effects. I will review the more common drugs your patients will likely be taking, but I can only cover the highlights. The Physician's Desk Reference of all drugs in use in America is a very heavy book over 3,000 pages long.

I believe drugs are widely overprescribed in America today. We are an over-drugged nation. In particular, many people are on antidepressants and tranquillizers that should not be. A lot of these people are addicted to their medications, and it is very hard to get them off their drugs when the acute episode that prompted the use of the drug is over. They have become dependent on their pharmacological support. Yet, who really wants to spend the rest of their life on a drug that numbs or tranquillizes them? With those who are ill we should avoid the use of drugs where there are other valid alternatives we can chose to get them better. Yes, I know, I'm preaching to the choir!

It is also true that drugs are among the greatest beneficial developments of all time. General anesthesia, for example was one of the major discoveries of the 19th century. Then we have penicillin, and morphine, and insulin. I have always been a reluctant prescriber of drugs, but I've been very grateful for them when they were needed.

A Brief Primer on Drugs

All drugs have four descriptors:

1. The class of drug. Examples include corticosteroids, H2 inhibitors, NSAID's, beta-blockers, ACE inhibitors, and SSRI's (selective serotonin reuptake inhibitors).
2. The chemical name of the drug.
3. The generic drug name.
4. The brand name.

Example: Valium

Class: a benzodiazepine drug (a class of tranquillizers)

Chemical name: 7-chloro-1,3-dihydro-1-methyl-5-phenyl-1,4-benzodiazepin-2(3H)-1

Generic drug name: diazepam

Brand names: Valium (US and Canada); Antenex (Australia)

Rule to remember: the generic name of a drug is lower-case; the brand name of the drug is capitalized. Examples: The drug diazepam is better known by its brand name Valium. The drug acetylsalicylic acid is better known by its major brand name, Aspirin.

Government regulation

The FDA classifies and controls the availability of drugs according to their "abuse potential." This is often based on social convention as much as on research:

- Schedule I: high abuse potential, with no accepted medical use: heroin, LSD, marijuana (still on this list, at least for now, although this is highly controversial, as you know). These drugs cannot be prescribed and their use is illegal.
- Schedule II: drugs with high abuse potential but medical uses as well: opiates, barbiturates, amphetamines, cocaine. These drugs can only be obtained with a narcotic prescription written by a physician.
- Schedule III: low to moderate abuse potential, with many medical uses: some tranquillizers and sedatives. These drugs require a regular prescription, written by a physician.
- Schedule IV: low abuse potential, many medical uses: codeine, valium, some other widely-used tranquillizers, as well as a vast number of other drugs. These also require a regular prescription by a physician or nurse practitioner.
- Schedule V: drugs with minimal abuse potential. These are over-the-counter drugs: NSAIDS, antacids, laxatives, etc.

Food Supplements

Drugs should not be confused with food supplements. Supplements include Chinese and Western herbs, vitamins, protein supplements, memory aids, energy boosters, liver detoxification supplements, prostate shrinking supplements, etc. The term "Supplement Facts" must be printed on the label of all commercially marketed supplements, and all the ingredients must be listed, the amount per serving, and the percentage of any established "Daily Value." Proposed benefits of the supplement can be listed, but NO claim to diagnose, treat, cure, or prevent any disease. There is usually a disclaimer by the FDA stating this, often printed in a separate box on the label.

Clinical trials in drug testing

To bring a new drug from its discovery to becoming a drug that can be prescribed takes up to 10 years (sometimes more), and costs many millions of dollars. Drug companies then charge consumers later on for this cost of bringing the drug to market. As a result, Viagra may now cost only a few cents per tablet to manufacture, but it can be marketed for over $20 a tablet. Knowing that drug companies need to recover their development costs does not seem to offset the sense of outrage we often feel when we pay an arm and a leg for such a drug. These drugs now reap enormous profits for the companies that market them. The newest drugs that are based on monoclonal antibodies, very popular in treating arthritis, various forms of cancer, and neurological conditions, are also very expensive.

There are four phases of testing and clinical trials required to get a drug approved for market distribution:

- Phase 0: animal testing of a promising drug.
- Phase 1: the drug is tried out on a small number of healthy volunteers, usually 20 to 100, to determine clinical safety of the drug in general terms, and the proper dosage for various people, based on age, gender, and weight of the patient.
- Phase 2: usually about 300 volunteers: further testing to determine how well the drugs works compared to a placebo. These must be randomized double-blind clinical trials.
- Phase 3: controlled multicenter trials on hundreds to thousands of patients, the actual number depending on the disease being studied (rarer diseases: fewer patients)

We will now discuss various classes of medications in use, starting off with nervous system drugs.

Antidepressants

Minor episodes of depression are a part of daily life, and they are best treated without drugs. Unfortunately this wise rule is not regularly adhered to by physicians, who often place their patients on tranquillizers to bring them out of a down period in their life when what they really need is support, understanding, friendship and love.

Major depression is associated with chemical imbalances in the brain, and is characterized by anhedonia: the loss of the ability to enjoy life or find any pleasure or comfort in it. There are feelings of intense sadness, a strong sense of worthlessness, loss of sex drive, weight loss or weight gain associated with the depression, either insomnia or hypersomnia, and there are often thoughts of death or suicide (or actual plans to commit suicide). Major depression and suicide go together, and constitute serious problems and much heartbreak in our society, as we all know.

Drugs are very helpful in treating major depression. Again, they are vastly overprescribed for minor depression. There are three classes of effective medications for major depression: tricyclic antidepressants, monoamine oxidase inhibitors (MAO inhibitors), and selective serotonin reuptake inhibitors (SSRIs).

All three classes of antidepressants increase the levels of "feel good" neurotransmitters in the synapses of the brain: dopamine, epinephrine (adrenalin), norepinephrine (noradrenalin), and serotonin (5 hydroxytryptamine). These are all monoamine neurotransmitters (one amine group on the end of the molecule: NH2)

Tricyclic antidepressants

The best known are Elavil®, Tofranil®, and Sinequan®. They block the reuptake of monoamine neurotransmitters from the synapses of the brain, thus prolonging their availability at these brain receptor sites. These neurotransmitters enhance alertness, facilitate coping skills, and generally improve mood. Elavil is particularly popular, and although it is a stimulant its use before bedtime can curiously help with sleep, as it makes the person feel less nervous and anxious about his or her problems.

Monoamine oxidase inhibitors (MAO inhibitors)

Nardil®, and Marplan® are the most common, but there are many others as well. These drugs block the chemical breakdown of monoamine neurotransmitters, increasing their concentration in the brain. Very popular a few years ago, they are less prescribed today because of their side effects, which we will discuss.

Side effects are frequent with both of these classes of drugs. The tricyclic antidepressants have anticholinergic effects on the body which decrease parasympathetic function and result in a dry mouth and throat, pupil dilation with possible blurred vision, tachycardia, trouble voiding, and constipation. Side effects of the MAO inhibitors include weight gain, impotence, postural hypotension, agitation, uncontrollable bursts of temper, and sometimes, hallucinations or seizures.

Selective serotonin reuptake inhibitors (SSRI's)

These drugs inhibit the reuptake of serotonin, and, with some of them, norepinephrine as well. This increases the concentration of these "feel good" neurotransmitters in the synapses of the brain, which elevates mood and enhances coping skills. Examples of these drugs are Prozac®, Zoloft®, Paxil®, Effexor®, Wellbutrin®, and many others.

SSRI's generally have milder side effects than the tricyclic antidepressants or the monoamine oxidase inhibitors. As a result they have become very popular and have largely replaced the other two classes of antidepressants (Elavil, as I noted, is still used by many patients). They do cause headaches, nausea, diarrhea, nervousness, skin rashes, or insomnia, and problems in some people with controlling their temper. Sometimes these side effects tend to diminish over time.

Drugs for Attention Deficit Hyperactivity Disorder (ADHD)

ADHD, which diagnosis now includes ADD (with less of a hyperactivity component) is characterized by restlessness, easy distractibility, short attention span and compulsivity. Amphetamines or similar-acting drugs are mild CNS stimulants that reduce or even eliminate symptoms in almost 90 percent of children who take them reliably and appropriately. It is curious that these stimulants do indeed help people, especially children, with this group of related disorders. The increased serotonin and dopamine in the brain helps the child to focus better and filter out distractions.

Dextro-amphetamine (Dexadrine®), methyphenidate (Ritalin®) and the newer, longer-acting drug pemoline (Cylert®) are the most widely used drugs. Strattera® is also becoming popular. These drugs are combined with family counseling and psychotherapy for best results.

ADD and ADHD are highly over-diagnosed in the US. ADHD is often confused with gifted kids, or mentally challenged kids, kids with family or social problems, dyslexia, hearing disabilities, or other medical disorders that also cause children to not pay attention in school. These children are often

wrongly put on these drugs. They do not improve or they actually get worse. ®If the ADD diagnosis is correct, most children really benefit from these medications (it can be dramatic).

The most common side effect is CNS overstimulation, with insomnia, dizziness, agitation, or loss of appetite. These symptoms tend to diminish with continued use of the drug. Hypertension can sometimes occur, or even cardiac arrhythmias, but both of these serious side effects are uncommon. Patients need to be carefully monitored and changed to another drug or have the drug withdrawn without replacement if these occur.

If the child with ADHD can be effectively managed by family and school counselors without drugs, that is best. If they are struggling, a drug such as Ritalin should be tried. The results can be amazing, if the diagnosis of ADHD was correct.

Rule to follow: it is best to avoid drugs in treating medical conditions whenever another treatment is likely to be successful. If drugs are resorted to, always weigh the benefits of using the drug versus the risks of not using it. Do the benefits clearly outweigh the risks? In the case of ADHD, drugs are often very helpful, above and beyond what can be accomplished without them.

Drugs for Excessive Anxiety and for Sedation

The two major classes of drugs used for these clinical situations are barbiturates and the benzodiazepines. They are among the most widely used drugs in the U.S. as well as in many other countries (modern life is very stressful). The most sedative neurotransmitter in the brain is GABA (gamma amino butyric acid). It resides in the reticular activating system and makes us relax and go to sleep when the time is right to do so. The challenge for drug inventors has been to design a drug that will make us relax (tranquillizer effects) without getting too sleepy (sedative effects). All of these drugs enhance the levels of GABA in the brain.

Barbiturates (such as phenobarbitol)

Phenobarbitol was first marketed by Bayer in 1912. It facilitates the retention of GABA and chloride, causing sedation, a sense of euphoria, and hypnosis. Barbiturates are more directly sedating than the newer benzodiazepines, and so they are no longer used as tranquillizers. They are still used as sleeping medications, as a supplement to general anesthetics, and for control of seizures.

Barbitol and phenobarbitol are long-acting barbiturates (effects last for 8-10 hours). They work well as sleeping pills but you wake up with a hangover! Well-known short-acting barbiturates include secobarbital (Seconal®, a popular sleeping pill in the 1960's and 1970's), amobarbital (Sodium Amytal®) and pentobarbital (Sodium Pentothal®, the so-called truth serum featured in many classic movies).

Many depressed individuals have attempted or succeeded in committing suicide taking a bottleful of these drugs. Ultra-short acting thiopental is used as an anesthetic agent (given IV).

Benzodiazepines (such as Valium)

These drugs enhance GABA secretion in the brain, thus causing sedative effects and skeletal muscle relaxation. They are used to treat anxiety states, nervous tension, agitation, delirium tremens during alcohol withdrawal, and as anticonvulsants. They work well as relaxants, without major sedative

effects. These attributes have made them enormously popular all over the world. The most widely known and utilized is diazepam (Valium®), one of the most popular drugs of the last 50 years in America and other countries. Valium was first marketed in 1963.

Dalmane®, Librium®, Tranxene®, and Klonopin® are also widely used long-acting drugs of this class. Valium is the most rapidly absorbed of all these drugs and has a prolonged length of active time in the body. This is why it has been so popular. Shorter acting benzodiazepines include Versed®, Xanax®, Ativan®, Serax®, and Restoril®. Xanax works quickly and is very popular with those who need a quick calming-down in the midst of their stress-filled lives. It has a short half-life in the body which is also desirable for such situations. Klonopin helps the most with those who have muscle spasms or a sense of jerking movements with their attacks of anxiety, as it quiets these down. Versed, given IV, is widely used as a short-acting anesthetic (for colonoscopy, biopsies).

Side effects of both classes of drugs are similar: drowsiness, dysarthria (trouble speaking clearly), ataxia, dermatitis, and a curious paradoxical overstimulation with strange behavior due to the loss of inhibition that we normally have (somewhat similar to the effects of alcohol in this regard, but causing more bizarre behavior).

In my next article I will discuss pain medications, drugs for respiratory problems, and drugs for diseases of the gastrointestinal tract.

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